

Appln. No. 09/744,515
Amdt. date September 29, 2003
Reply to Office action of May 28, 2003

REMARKS/ARGUMENTS

The Office action dated May 28, 2003 has been reviewed and the comments therein carefully considered.

In the Office action, objection is made to the drawings for the reasons set forth in Paragraph 1. In response to this objection, Applicant submits herewith a proposed drawing correction. As can be seen, Fig. 1 has been amended to include a series of dotted lines within the periphery of the shaft on the portion of the shaft which is engaged with a central hub portion 4a. These dotted lines represent the internal splines on the hub portion while the external splines on the shaft are clearly shown at the ends of the shaft (note that all of Fig. 1 except the splined end portions of the shaft are shown in cross-section).

The Office action additionally contains objections to the wording of certain claims and a rejection of claims 1-14 under 35 U.S.C. § 112. By the accompanying amendment, Applicant has addressed the objection to the wording and the formal rejection of claims. It is believed that the claims submitted comply with the statutory requirements.

Please note that amended claim 1 recites a first piston, a first clutch means and a first gear. This is because the final portion of the claim recites movement of the piston in a "first direction" which, of course, cannot engage all the sets of clutch plates or all the gears and therefore it is necessary to specify that a first piston is moved, parts of a first clutch means are interengaged and a first gear is drivingly engaged with the shaft.

The above discussed amendment also overcomes the first claim objection in Paragraph 3 of the Office action. It is pointed out that the term "reciprocable parallel" in line 3 and line 6 of claim 4 cannot be changed because it would not be sensible to use the phrase "reciprocably parallel" to the longitudinal axis.

The amended claims also address the issue regarding claims 11-16 concerning the preamble.

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Claims 1-9, 11 and 12 have been rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Japanese Document JP-9112636. This rejection is respectfully traversed.

As can be seen from the amended claims, claim 1 indicates a means for supply fluid through the exterior of the hub in a direction substantially perpendicular to the gear shaft. In contrast, the device shown in the cited reference shows fluid ports perpendicular to the shaft but external to the hub. In the device of the reference, the fluid enters the hub along the shaft and so the fluid port at the position where the fluid enters the hub is parallel rather than perpendicular to the shaft. This arrangement tends to throw fluid out of the passages when a gear is disengaged thereby improving the speed of the gear changing and allowing the fluid to be recirculated, cleaned and cooled.

Claim 10 has been rejected as unpatentable over the aforementioned Japanese Document in view of U.S. Patent No. 4,462,271 to Stieg. Claims 13-16 have been rejected under 35 U.S.C. § 103 as unpatentable over the aforementioned Japanese Document in view of Patton et al. (U.S. Patent No. 4,843,902). These rejections are respectfully traversed.

As set forth in Applicant's claims, the first clutch means is positioned between the first piston and a side wall of the first gear, as can be clearly seen in Fig. 1. This means that the gear wheel itself acts as a "backstop" to the pressure provided on the clutch plates by the piston. In contrast to the adaptors described in the cited prior art which require an annular plate to be provided at the outer ends of the hub to provide a reaction force against the piston, this plate is held in position by, for example, a circlip which is more likely to yield to the large force provided by the piston and much more likely to leak fluid. Accordingly, by utilizing the side walls of the gears in this way, the arrangement of the present invention allows a more compact and reliable gearbox adaptor to be produced.

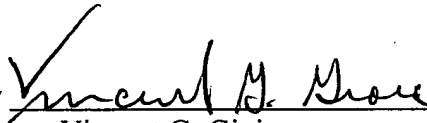
It is pointed out that Applicant has submitted new claims 17 and 18 which further recite aspects of the gears/pistons/clutch plate arrangement. It can be seen from claim 17 that a "boss" is included. These feature as set forth in claims 17 and 18 is clearly described in the drawings.

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In view of the foregoing amendment and remarks, it is respectfully submitted that the application is now in condition for allowance and, accordingly, reconsideration and allowance are earnestly solicited. If any questions remain regarding the allowability of the application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

Respectfully submitted,

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VGG/llb
Enclosure
Appendix (1 page of Annotated Drawing Sheet)

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